

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Computer science II - Operating Systems and Computer		Code 1010334221010332872
Field of study Automatic Control and Robotics	Profile of study (general academic, practical) (brak)	Year /Semester 1 / 2
Elective path/specialty -	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) part-time	
No. of hours Lecture: 14 Classes: - Laboratory: 16 Project/seminars: -		No. of credits 5
Status of the course in the study program (Basic, major, other) (brak)		(university-wide, from another field) (brak)
Education areas and fields of science and art		ECTS distribution (number and %)
Responsible for subject / lecturer:		
dr inż. Dominik Łuczak email: Dominik.Luczak@put.poznan.pl tel. 48 61 665 2557 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	He has ordered knowledge of selected algorithms and data structures as well as the methodology and techniques of procedural and object-oriented programming. - [K_W10]
2	Skills	He can construct a simple solution algorithm engineering tasks and implement, test, and run it in your chosen development environment on a PC for selected operating systems. - [K_U10]
3	Social competencies	He is aware of and understands the validity of non-technical aspects and effects of engineering activities including its impact on the environment and the related responsibility for decisions - [K_K02]
Assumptions and objectives of the course:		
The aim of the course is to learn the construction of computer systems including: CPU, memory, and bus interfaces. Student after completion of education should be able to: configure the operating system, written in high-level multi-threaded application that supports the selected communication interfaces, prepare scripts run from the command line for batch processing.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. He has ordered knowledge of computer architectures, systems, and computer networks and operating systems including real time operating systems - [K_W13]		
2. He has ordered knowledge of selected algorithms and data structures as well as the methodology and techniques of procedural programming and object-oriented - [K_W10]		
Skills:		
1. He can construct a simple solution algorithm engineering tasks and implement, test, and run it in your chosen development environment on a PC for selected operating systems - [K_U10]		
Social competencies:		
1. He is aware of and understands the validity of non-technical aspects and effects of the activity of an engineer-informatics and related responsibility for decisions. - [K_K02]		
Assessment methods of study outcomes		

Lecture: assessment of knowledge and skills shown on the final exam of a problem - design.		
Laboratory: current control of knowledge necessary for the accomplishment of the problems in the area of tasks in the laboratory, rewarding gain skills they met the principles and methods, assessment of ability to use the acquired knowledge and skills to solve complex problems.		
Course description		
Lecture: The general structure of the computer. Machine representation of data and execution of arithmetic operations. Organization and architecture of memory systems. Peripherals and interfaces. The organization unit. Parallel processing of data. Multithreaded systems. Synchronization of threads. The functions of the operating system. Real time operating systems. Industrial computers. Virtualization and systems based on cloud computing.		
Laboratory: Install the operating system in a virtual machine. Configuring basic peripherals and communication interfaces. Introduction to basic applications. Preparing scripts run from the command line. Use schedule for the planned execution of specific system functions. Preparing applications written in high level language using the selected communication interfaces and multi-threading. The development of a complex system using knowledge and skills for the automatic collection and processing of data from other systems.		
Basic bibliography:		
<ol style="list-style-type: none"> 1. Lecture materials made available by the lecturer in electronic form 2. Ellen Siever, Stephen Figgins, Robert Love, Linux in a Nutshell, 2009 3. Cameron Newham, Learning the bash Shell: Unix Shell Programming, 2005 4. Linda Null, Pennsylvania State University Linda Null, Julia Lobur, The Essentials of Computer Organization and Architecture, 2014 		
Additional bibliography:		
<ol style="list-style-type: none"> 1. Gareth Halfacree, Eben Upton, Raspberry Pi User Guide, 2012 2. Hennessy J.L., Patterson D.A., Computer Architecture A Quantitative Approach Fifth Edition, Morgan Kaufmann Publishers, San Francisco, 2011 3. Łuczak D., Remote laboratory with WEB interface, Computer Applications in Electrical Engineering, Vol. 9, str. 257-268, Poznań, 2011, ISSN 1508-4248. 		
Result of average student's workload		
Activity	Time (working hours)	
1. Lectures	14	
2. Laboratory	16	
3. Preparation for laboratory	30	
4. Preparation of IT system	40	
5. Preparation for tests	10	
6. Preparation for exam	30	
7. Consultations and exam	10	
Student's workload		
Source of workload	hours	ECTS
Total workload	150	5
Contact hours	40	2
Practical activities	80	3